

## System and Method For Creating Model Investment Portfolios

### 1. Background

#### Technical Field

5 The invention generally relates to financial systems. More particularly, the invention relates to a method and apparatus for creating an investment portfolio.

#### Related Art

Investing over the Internet has become commonplace. On-line brokers and brokerage sites enable all types of investors to engage in trading activities. These trading activities include trading stocks, options, etc. on the New York Stock Exchange, NASDAQ, American Stock Exchange, and foreign exchanges. In addition, investors may trade futures, currencies, mutual funds, and the like in respective exchanges.

In addition to trading over the Internet, investors may also track their investments over the Internet. Trading houses (for example, Ameritrade) allow investors to monitor the value of their account on-line. Some companies permit investors to create portfolios that permit monitoring of the portfolios over a period of time (for example, Yahoo! Finance). With Yahoo! Finance, however, investors are constrained to enter separately the quantity and purchase price of each stock. While allowing an investor to monitor accurately a stock or portfolio from a specific starting value, the exercise of separately entering each stock's quantity and purchase price can become tedious when creating watch accounts.

20 Watch accounts (also known as watch account portfolios or watch portfolios) are portfolios that have been created to monitor stocks (or, more generally, issues) over time. An  
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example of a watch account is available at Clearstation <<http://www.clearstation.com>>. Here, an investor may designate a watch account with a number of stocks and display how those stocks have changed since the watch account was first created. However, no method exists to assign an initial starting value to the watch account or to designate a number of shares purchased.

5 Clearstation also supports the use of default values when creating a normal portfolio. The default values in Clearstation are defined as the quantity of shares needed to have a total investment in a stock be equal to \$10,000. So, if one was to designate five stocks and select the default values option, the portfolio is created with enough shares of each stock so the initial investment in each stock was \$10,000 on the day the stock was added to the account. However, the approach shown by Clearstation for using the default valuation of \$10,000 for each holding fails to adequately mirror the monitoring situations needed by investors watching a stock or set of stocks. There is no provision for designating a fixed number of shares, designating a total valuation of a portfolio, or altering the date upon which the issues are initially priced. Because of these shortcomings, alternative methods of designating portfolios are needed.

## 2. Summary

The present invention provides a system and method for creating model investment portfolios. Using the present invention, a user may quickly create a portfolio based on different criteria. In one embodiment, a user may create a portfolio for a hypothetical collection of stocks for monitoring market trends or to test out new investment strategies without risk. A user is

20 provided with the option of specifying the date upon which the issues were purchased. This provides the user with the ability to back test investment strategies up to the present. Further, the values of the price of the issues may be split-adjusted to eliminate confusion over the quantity of shares purchase.

When creating a portfolio, a user selects a number of issues for inclusion in a portfolio. Next, the user determines how the quantity of each issue in the portfolio is to be selected. Different methods of selecting the quantity of the issues include designating an initial number of shares of each issue, a total valuation of the portfolio with the value allocated to each issue being equal, and other methods are disclosed.

These and other novel advantages, details, embodiments, features and objects of the present invention will be apparent to those skilled in the art from following the detailed description of the invention, the attached claims and accompanying drawings, listed herein, which are useful in explaining the invention.

### 3. Brief Description of Drawings

Figure 1 shows a general purpose computer supporting the display and annotation of an electronic document in accordance with embodiments of the present invention.

Figures 2A and 2B show systems for delivering financial information to workstations in accordance with embodiments of the present invention.

Figures 3 to 7 show user interfaces for creating a portfolio in accordance with embodiments of the present invention.

Figure 8 shows a method for generating a portfolio in accordance with embodiments of the present invention.

Figure 9 shows interactions between a client and a server for creating a portfolio in accordance with embodiments of the present invention.

Figure 10 shows an alternative embodiment of interactions between a client and a server for creating a portfolio in accordance with embodiments of the present invention.

#### 4. Detailed Description

The present invention relates to a system and method for capturing annotations associated with a non-modifiable document.

Although not required, the invention will be described in the general context of computer-executable instructions, such as program modules. Generally, program modules include routines, programs, objects, scripts, components, data structures, etc. that perform particular tasks or implement particular abstract data types. Moreover, those skilled in the art will appreciate that the invention may be practiced with any number of computer system configurations including, but not limited to, distributed computing environments where tasks are performed by remote processing devices that are linked through a communications network. In a distributed computing environment, program modules may be located in both local and remote memory storage devices. The present invention may also be practiced in personal computers (PCs), hand-held devices, multiprocessor systems, microprocessor-based or programmable consumer electronics, network PCs, minicomputers, mainframe computers, and the like.

Figure 1 is a schematic diagram of a computing environment in which the present invention may be implemented. The present invention may be implemented within a general purpose computing device in the form of a conventional personal computer 100, including a processing unit 110, a system memory 120, and a system bus 130 that couples various system components including the system memory to the processing unit 110. The system bus 130 may be any of several types of bus structures including a memory bus or memory controller, a peripheral bus, and a local bus using any of a variety of bus architectures. The system memory includes read only memory (ROM) 140 and random access memory (RAM) 150.

A basic input/output system 160 (BIOS), containing the basic routines that help to transfer information between elements within the personal computer 100, such as during start-up, is stored in ROM 140. The personal computer 100 further includes a hard disk drive 170 for reading from and writing to a hard disk, not shown, a magnetic disk drive 180 for reading from or writing to a removable magnetic disk 190, and an optical disk drive 191 for reading from or writing to a removable optical disk 192 such as a CD ROM or other optical media. The hard disk drive 170, magnetic disk drive 180, and optical disk drive 191 are connected to the system bus 130 by a hard disk drive interface 192, a magnetic disk drive interface 193, and an optical disk drive interface 194, respectively. The drives and their associated computer-readable media provide nonvolatile storage of computer readable instructions, data structures, program modules and other data for the personal computer 100.

Although the exemplary environment described herein employs a hard disk, a removable magnetic disk 190 and a removable optical disk 192, it should be appreciated by those skilled in the art that other types of computer readable media which can store data that is accessible by a computer, such as magnetic cassettes, flash memory cards, digital video disks, Bernoulli cartridges, random access memories (RAMs), read only memories (ROMs), and the like, may also be used in the exemplary operating environment.

A number of program modules may be stored on the hard disk, magnetic disk 190, optical disk 192, ROM 140 or RAM 150, including an operating system 195, one or more application programs 196, other program modules 197, and program data 198. A user may enter commands and information into the personal computer 100 through input devices such as a keyboard 101 and pointing device 102. Other input devices (not shown) may include a microphone, joystick, game pad, satellite dish, scanner, or the like. These and other input devices are often connected

to the processing unit 110 through a serial port interface 106 that is coupled to the system bus, but may be connected by other interfaces, such as a parallel port, game port or a universal serial bus (USB). A monitor 107 or other type of display device is also connected to the system bus 130 via an interface, such as a video adapter 108. In addition to the monitor, personal computers typically include other peripheral output devices (not shown), such as speakers and printers.

The personal computer 100 may operate in a networked environment using logical connections to one or more remote computers, such as a remote computer 109. The remote computer 109 may be another personal computer, a server, a router, a network PC, a peer device or other common network node, and typically includes many or all of the elements described above relative to the personal computer 100, although only a memory storage device 111 has been illustrated in Figure 1. The logical connections depicted in Figure 1 include a local area network (LAN) 112 and a wide area network (WAN) 113. Such networking environments are commonplace in offices, enterprise-wide computer networks, intranets and the Internet.

When used in a LAN networking environment, the personal computer 100 is connected to the local network 112 through a network interface or adapter 114. When used in a WAN networking environment, the personal computer 100 typically includes a modem 115 or other means for establishing a communications over the wide area network 113, such as the Internet. The modem 115, which may be internal or external, is connected to the system bus 130 via the serial port interface 106. In a networked environment, program modules depicted relative to the personal computer 100, or portions thereof, may be stored in the remote memory storage device. It will be appreciated that the network connections shown are exemplary and other means of establishing a communications link between the computers may be used.

In addition to the system described in relation to Figure 1, the invention may be practiced on a handheld computer. Further, purpose-built devices may support the invention as well. In short, handheld computers and purpose-built devices are similar in structure to the system of Figure 1 but may be limited to a display (which may be touch-sensitive to a human finger or stylus), memory (including RAM and ROM), and a synchronization/modem port for connecting the handheld computer and purpose-built devices to another computer or a network (including the Internet) to download and/or upload documents or download and/or upload annotations. The description of handheld computers and purpose-built devices is known in the art and is omitted for simplicity. The invention may be practiced using C. Also, it is appreciated that other languages may be used including C++, assembly language, and the like.

Figure 2A shows a system for delivering financial information to a workstation in accordance with embodiments of the present invention. A user receives financial information at workstation 201 from a set of backend servers – 205, 206, and 207. These servers receive financial data from a variety of sources. The sources are well known in the art and are listed here for reference. Historical database 202 provides historical information of stocks including the closing prices and volume of trades for every trading day over the past number of years. This historical data covers prices for stocks and mutual funds, as well as major indexes such as the S&P 500, the Dow Jones Industrial Average, and the like. Quotes source 203 provides the Quotes server 206 with current information regarding issues including current trading values, volumes, percent changes, and the like. News source 204 provides news stories for traded issues to News Server 207.

Workstation 201 includes a system for receiving and displaying received financial information from the various backend servers 205, 206, and 207. It is appreciated that all

connection pathways may include the Internet. In one embodiment, workstation 201 includes a stand-alone software package that displays the financial information from the backend servers 205, 206, and 207. This software package may be a financial software package including Intuit's Quicken or Microsoft's Money. In an alternative embodiment, workstation 201 is running an Internet browser capable of accessing information across the Internet. The browser may be Netscape 4.6 by the Netscape Corporation or Internet Explorer 5.0 by the Microsoft Corporation. The backend servers 205, 206, and 207 may be connected to the Internet and provide a site for access by investors at workstations 201 to create and manage portfolios as are known in the art. An example of a site is Yahoo! Finance by Yahoo! and Moneycentral by MSN <<http://moneycentral.msn.com>>. These sites provide an investor with the ability to receiving current information regarding issues in his portfolio.

Figure 2B shows an alternative system for delivering financial information to a workstation in accordance with embodiments of the present invention. A user receives financial information at workstation 201 from a financial information server 208. The financial information server receives information from other databases and servers. The sources are well known in the art and are listed here for reference. Reference database 210 provides reference information to the financial information server 208. Country database 211 provides country-specific information when needed. For example, country database 211 may provide information to financial information server 208 when the markets close in the respective countries. Quotes source 203 and News source 204 provide the News/Quotes server 209 with current information regarding issues including current trading values, volumes, percent changes, and the like. In this embodiment, the workstation may connect directly to and receive information from the financial



information server 208 without needing to accommodate information arriving from other sources.

Figures 3 to 7 show user interfaces for creating a portfolio in accordance with embodiments of the present invention. The user interfaces may be used when accessing one of the above sites to allow investors to easily set up portfolios. The interfaces may be downloaded as HTML pages with information being posted back to the server for processing. Alternatively, the interfaces may be part of local program developed to minimize the processing to be accomplished by the server. For example, the interfaces may be programmed in Java or ActiveX or any other language as known in the art that may run in a browser running on workstation 201. For instance, to create a model portfolio, the user may access the MoneyCentral site at <http://moneycentral.msn.com>. From the MoneyCentral home page, the user clicks on the "My Portfolio" link, which takes them to the ActiveX Portfolio Manager. The ActiveX control is an executable program that runs on the client machine and communicates with a server using HTTP requests. The MoneyCentral Portfolio Manager runs as an ActiveX control when the user is accessing the site using Internet Explorer 3.0 or higher OR Netscape Navigator 3.0 or higher on Win 95/98 or Windows NT. From the Portfolio Manager the user clicks on the File menu and chooses the "New Account..." option. This action brings up the dialog box as shown in Figure 3.

Figure 3 shows a user interface 301 after a user has indicated she wants to create a new account or portfolio. A variety of types of accounts may be displayed, with each having a user interface portion for receiving a user's selection. The interface provides the user with the option of creating a new regular account 303, a new watch account 304, or import an existing account 305. Section 306 provides a user interface portion for receiving user navigational inputs. Once a user has selected the type of account desired, the user is directed to the user interface of Figure 4.

As used herein, a normal or regular account is an account in which a user actually owns the issues as entered into the account. A watch account, on the other hand, is an account in which the user does not actually own the issue or the quantity of issues or the allocation of issues in the account. A "model" account allows the user to specify a portfolio based on some predefined allocation of resources. The allocation may include an equal number of shares of each investment or it may be a total portfolio value distributed among the investments or it may be based on one of the allocation techniques described herein. A model account may relate to an account that is created to reflect an investor's ideal investment account. The model creation allocation system may be applied to both regular (normal) accounts and watch accounts. Where permitted, the purchase of issues based a model method may allow for selection of non-whole numbers of shares. Alternatively, the system may also include the ability to round up or round down the number of shares to be purchased to accommodate actual purchase requirements of different exchanges.

In one embodiment, only one type of account may exist with the option of making it a model account. This system makes it simple of a new user to establish accounts without having to separate out watch accounts from regular accounts. In another embodiment, watch accounts are separately defined from regular accounts. One advantage of keeping regular accounts separate from watch accounts is in the computation of realized gain for the account.

Figure 4 shows a user interface 401 for designating the name of the account and the issues contained within the account. User interface portion 402 receives a user input designating the name of the account. User interface portion 403 receives a user input designating the type of issues to be included within the account. If a user does not know the symbol associated with an issue, the user may search for the symbol through a search feature. The search feature may be

enabled through button 404. However, for simplicity, the search feature is not described herein.

In one embodiment, a user may indicate that he wants to create a model portfolio, in which the user may test investing strategies without risk. To designate the model portfolio as such and to allow for easier creation of the model portfolio, a user checks a check box 405. It is appreciated that other user interface portions may be provided including buttons, radio buttons, and other like selection techniques that are known in the art. Navigation buttons 406 are used to control navigation and permit forward navigation once a specified number of fields (402 and 403) have been populated.

Figure 5 shows the user interface of Figure 4 with fields populated. Specifically, user interface window 501 includes the name of the account user interface portion 502 with the account named "My Model Portfolio". User interface portion 504 includes the names of four issues including Amazon.com (amzn), Dell Computers (dell), Intel Corporation (intc), and Microsoft Corporation (msft). Here, the Model Portfolio box 505 has been checked. Once checked, new user interface portion 506 having options available for configuring a model portfolio is displayed. In an alternate embodiment, model portfolio box 505 may be eliminated as population of any of the interfaces in portion 506 may enable the model portfolio designation of the account.

User interface portion 506 provides a number of selectable options for configuring the model portfolio. First, selection of option 507 permits a fixed quantity of each issue to be purchased. If this option was selected, 100 shares of each of the above issues will be included in the portfolio. The option is shown with an initial designation of 100 shares of each stock. In an alternate embodiment, another user interface portion is provided that permits a user to select the number of shares of each to be added (for example, 10 or 1000 shares of each).

Second, selection of option 508 permits a fixed amount of money be allocated to each issue. As shown in Figure 5, \$10,000 is applied to each stock. Applied to the four above stocks, \$10,000 of each would be added to the portfolio. In an alternative embodiment, a user definable value may be substituted for the initial \$10,000 figure. The user definable value may be set via a dialog box, drop down menu listing predefined values, and the like.

Third, selection of option 509 permits designation of a total portfolio value. The initial value may be set to \$10,000, for example. Alternatively, there may be no initial value specified, instead waiting for user input. Further, option 509 may include a drop down menu listing predefined values including, for instance, \$10, \$50, \$100, \$500, \$1000, \$10,000, \$100,000 and the like.

It is appreciated in the above drop down menu examples, any values may be specified and the listed values are not intended to be the only values usable in the described embodiment.

The options shown in interface portion 506 are but a few of the options for specifying how many shares should be purchased. The following lists the above options and others. It is appreciated that other options for deciding how many shares to purchase are available and considered within the scope of the invention.

1. Specify the total number of shares in each issue.
  - 1.1 The number of shares to purchase is predefined.
  - 1.2 The number of shares to purchase is definable by the user.
2. Specify the value of each issue to be purchased.
  - 2.1 The value of each issue is predefined.
  - 2.2 The value of each issue is definable by the user.
3. Specify the value for the portfolio

- 3.1 The value of the portfolio is fixed to a predefined value (e.g., \$10,000).
- 3.2 The value of the portfolio is definable by the user.
4. Weight the allocation of the issues in a portfolio as based on criteria (e.g., purchase more of one issue than another in the same portfolio).
- 4.1 Even distribution
- 4.2 Market Capitalization (e.g., purchase more issues that have a greater market capitalization than issue that have a lesser market capitalization)
- 4.3 Risk (e.g., purchase more issues having a higher risk than having a lower risk)
- 4.4 Industry Sector (e.g., purchasing more issues of technology stocks than textile stocks)
- 4.5 PE Ratio (e.g., purchasing more issues with a higher PE ratio than a lower PE ratio)
- 4.6 Value (e.g., purchasing more issues with a greater cost per share than a lesser cost per share)
- 4.7 Dividends (e.g., purchase more of issues that pay dividends than those that do not pay dividends)
- 4.8 Weighting based on recommendations from industry analysts

As to the various weighting factors, a user may specify how to weight the purchase of the stocks. Also, the user may specify whether the weighting should be applied to a given portfolio.

Further, portfolio options window 506 includes interface 511 and selection button 512. Interface 511 permits designation of a day from which the last trade price is determined. A user may enter a date in interface 511. Alternatively, a user may select button 512 and receive a

navigable calendar that permits a graphical selection of a date. Finally, navigation buttons 513 are provided.

Figure 6 shows a user interface similar to that of Figure 5 but with separate options selected. Here, option 509 has been selected (as shown as 601) with a new value for the each stock (\$20,000 as compared to the \$10,000 in Figure 5). Further, the date in user interface portion 603 has been changed from January 11, 2000 (Figure 5), to January 3, 2000.

When the finish button in 605 is pressed, the client-side ActiveX sends a request to the server to get closing prices on 1/3/00 for each of the stocks in the model portfolio account. The server sends the data back to the client machine where the ActiveX control uses it to calculate the number of shares of each stock to purchase.

The ActiveX control will calculate the number of shares required to purchase \$5,000 of each stock so that the total account value is \$20,000. Since model portfolios are used for simulation, the number of shares to be added is not rounded to whole numbers, but rather fractional shares are added to the account. In this example the following transactions will be added to the "My Model Portfolio" account:

Issue	Closing Price as of January 3, 2000	Number of Shares to Purchase to Set Value Initially at \$5,000
AMZN	\$89.375	55.944
DELL	\$50.875	98.28
INTC	\$87	57.471
MSFT	\$116.563	42.895

Once these calculations have been made on the client machine using the ActiveX control, the transactions are written to the users data file, which resides on the client workstation 201. The user can then see the account displayed in the Portfolio Manager 701 as shown in Figure 7.

Figure 7 shows a resulting view after completing the account designated by the user interfaces of Figures 3 to 6. The portfolio is shown in the Portfolio Manager 701 in a browser. Grouping 702 shows the four stocks described above. Display portion 703 shows the last price of the stocks. Display portion 704 shows the quantity purchased for the stocks. Display portion 705 shows the current market value of the stocks in 702. Display portion 706 shows the gain computed from the difference between the current market value and the original purchase value of the stock. Display portion 707 shows the percentage gain realized on the investment for each stock on 702.

In the above description, model watch accounts are differentiated from normal accounts. Providing normal accounts with the ability to specify purchase amounts and purchase prices enables investors to accurately reflect their actual portfolios. The model options in window 506 simplify the method for establishing portfolios in which (for instance) no real money is actually invested. However, in an alternative embodiment, the options available in window 506 may be applied to normal accounts and non-model, watch accounts as well. In this latter embodiment, a user may have the option of entering the quantity of each issue held as well as a quantity, or merely entering the issue and letting the system select the quantity or value applied to the issue or issues. Permitting normal accounts to be established, based on predefined options, allows simplified creation of the accounts. An implementation of this latter embodiment may be in the field of day trading.

To assist day traders with making purchases quickly, the system may include the ability to store preferences for portfolio creation. For example, if a day trader likes to purchase all issues in batches of 500, the system may populate the indication of the number of shares to be purchased at 500. So, when quickly specifying a trade, the trader does not need to separately

enter his or her selection criteria repeatedly. The preferences may be stored on the server or may be stored on the client.

Figure 8 shows a method for generating a portfolio in accordance with embodiments of the present invention. In step 801, a user operates a user interface to indicate that he wants to create a new account. Next, in step 802, the user determines the type of account to be created. In step 803, the user specifies the issues to be added to the account. The system determines in step 804 whether the user specified the account to be a model account.

In an alternate embodiment, step 804 may be a determination of whether the user selected any of the simplified account creation options. In this alternative embodiment, the simplified account creation options are applied to normal accounts in addition to model accounts.

Returning to Figure 8, if not a model portfolio, then the user is prompted in step 806 to select a quantity of each issue for inclusion in the portfolio. Next, in step 807, the system generates the portfolio. If the portfolio is a model portfolio, then the user is prompted in step 805 to specify the simplified allocation of funds/number of issues option as described above. Finally, the system generates the portfolio in step 807.

Figure 9 shows interactions between a client 901 and a server 902 for creating a portfolio in accordance with embodiments of the present invention. First, having received the designated issues to be purchased from the user, the client specifies the issues and the trading closing date that is to be used to calculate the closing price for the issues and passes this information to the server 902 in step 903. Next, in step 904, the server 902 returns the price of the issues on the closing date. Based on the option selected by the user, the client 901 selects the quantity of issues to be purchased in step 906 that satisfy the selected option. Finally, the portfolio is stored. The portfolio may be stored locally (as shown by step 908) or stored on the server (as shown by step



907). Advantages for storing the portfolio locally include minimizing the space needed on the server for storing the portfolio and ensuring that only users of the workstation 201 will have access to the portfolio. Advantages for storing the portfolio on the server 902 include permitting the user to access the portfolio from multiple workstations (for example, home and work) and ensuring the integrity of the portfolio should the workstation 201 fail (for example, experiencing a hard drive crash).

Figure 9 also shows optional return of other information regarding the issues in step 905. Here, step 905 may include sending information relating to the weighting factors specified by a user. For example, the information transmitted in step 905 may include market capitalization information, risk assessments, industry sector information, PE ratios, value information, dividend information, and recommendations from industry analysts.

Figure 10 shows an alternative embodiment of interactions between a client and a server for creating a portfolio in accordance with embodiments of the present invention. Figure 10 has the selection of the quantity of each issue to be purchased being decided on the server 1002, rather than on the client 1001. In step 1003, the client transmits the specific issues, closing date, and selection criteria to the server. In step 1004, the server 1002 determines the quantity of each issue to add to the portfolio. In step 1005, the client 1001 is updated with the quantity of each issue and the value (or purchase price per share) of each issue purchased. In step 1006, the portfolio is stored on the server. Alternatively, the portfolio is stored on the workstation 201 in step 1007.

When storing the portfolio (steps 907 or 908 or 1006 or 1007), the storage may take the data structure of "symbol (1), quantity (1), symbol (2), quantity (2), ..." or "symbol (1), symbol

